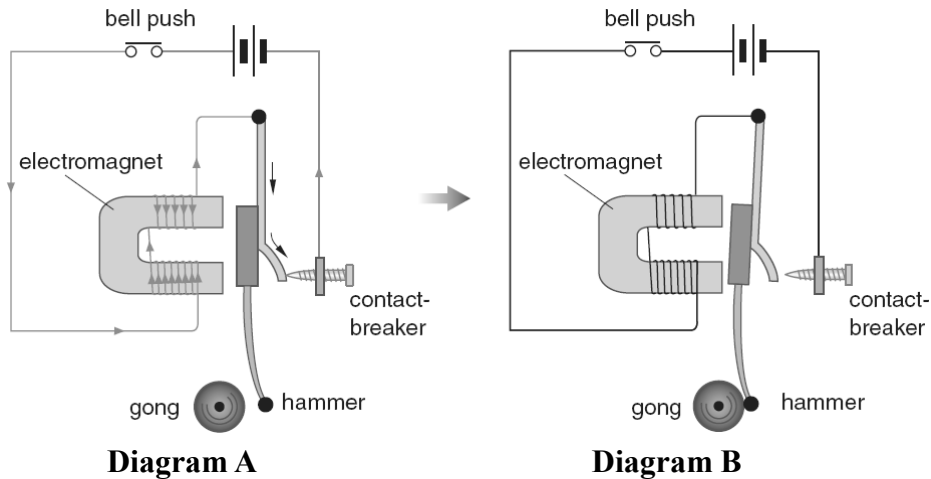


Working principle of a gong

Refer to the diagram below :



1. What is an “electromagnet”? How can we construct it ?

-
-

2. Diagram A represents the moment when the bell push is pressed.

The circuit is opened / closed . When current flows through, the magnet becomes _____.

3. Label on the diagram, the polarity of the two ends.

- 4 As the hammer (iron) is magnetic material, it is _____ to the gong, and leaves the circuit – breaker. Then, the hammer hits the gong.

- 5 As the hammer leaves the contact – breaker, the circuit is now _____. Thus, the electro-magnet _____.

- 6 The hammer is thus, _____ to the magnet, and returns to its position.

Think 1 Why as long as the push is pressed, many “ding” is heard, instead of one?

- 2 Can the current of the above diagram flows in a reverse direction?

Electric motor (basic)

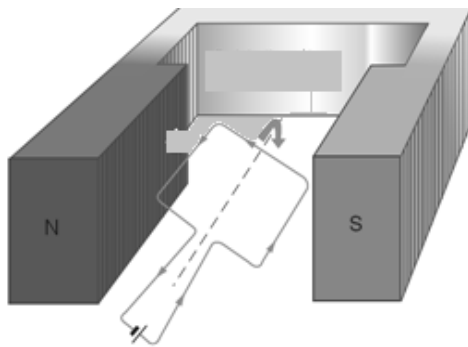


Diagram A

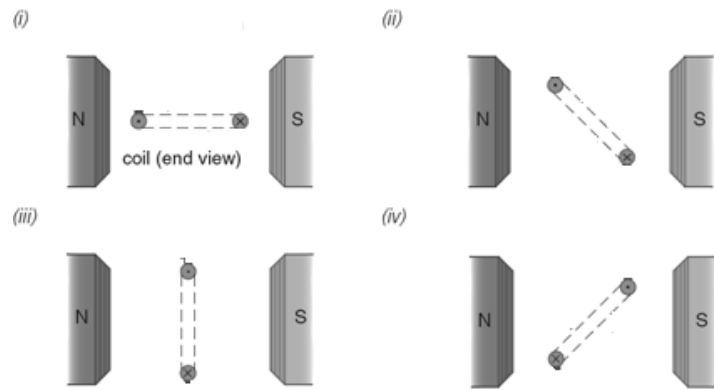


Diagram B

- 1 Label, in the diagram A, the direction of the magnetic field.
- 2 There is a rectangular coil between the magnets. Indicates the side(s) that experience magnetic force.
- 3 Using an appropriate rule, determine the force on the right-hand-side of the coil. Hence, judge whether the coil rotates clockwise or anticlockwise.

The coil rotates _____ .

- 4 Refer to diagram B. In (i) and (ii), determine the direction of forces onto the two ends of the wire.
- 5 Determine the direction of forces on both ends of wire in (iii). Suggest why the wires can continue to turn (to the stage of (iv)).

The coil shoot past the vertical _____ .

- 6 The coil, at stage (iv), reverse its motion. Explain why.

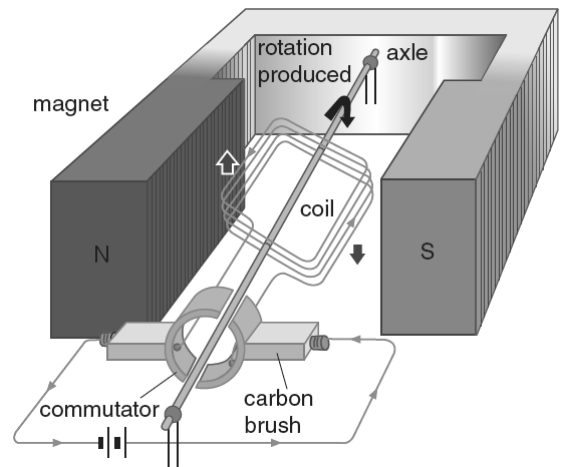
Electric motor with commutator

The diagram on right shows a simple d.c. motor

One special feature of the motor :

It contains a pair of _____ connected to

a _____.

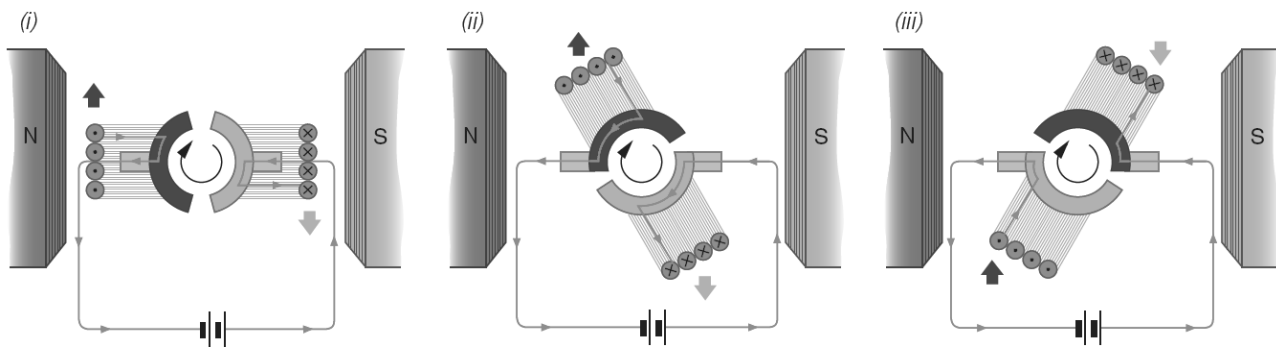


The use of split rings :

It _____ its connection with coil after every _____.

Thus, it allows the coil to _____.

Refer to the picture below :



Methods to increase the turning effect of coil

The turning effect on a current-carrying coil inside a B-field can be increased by

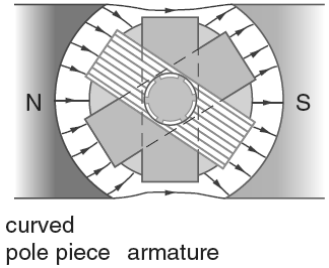
- (i) _____ the current,
- (ii) _____ the number of turns in the coil,
- (iii) _____ the area of the coil (within the B-field) ;
- (iv) _____ the strength of B-field.

Variations of simple d.c. motor

(1) Practical Motor

A practical motor (Fig 4y) has several modifications to the simple d.c. motor:

- (1) The coils consist of large number of turns ;
- (2) The coils are set at _____ angles and wound on a soft-iron coil called _____. This gives a smoother running and greater turning effect.
- (3) _____ magnets are used so that the coils can stay longer, at _____ to the B-field.



(2) a.c. Motor

An a.c. motor is different from a d.c. motor by using _____ rather than permanent magnets. The _____ changes direction as current flows backwards and forwards through the coil.

➔ Aim :